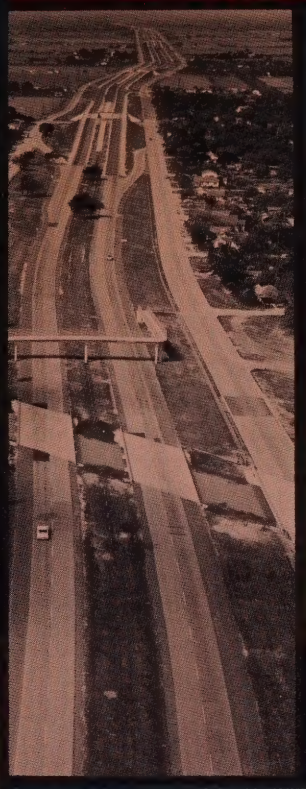
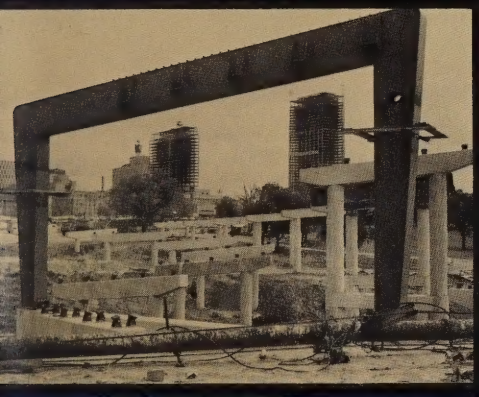
Texas Highways

February 1970





Over the Brazos River and through the "Hub of Texas," IH 35 in Waco is nearing completion. Two more sections of the superhighway now are under construction and one more is programmed which will complete the highway through the city. This section should be open in the spring. Just across the Brazos, to the left of the freeway, is Fort Fisher, a Texas Rangers company headquarters and museum, and a small park and camp site for travelers. Baylor University can be seen on the left a few blocks beyond. Photograph by Tim Newman, Automation Division.

Texas Highways

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About Our Cover
Covers from *Texas Highways* in the 60's spotlight some Department achievements during the decade. They also show part of the evolution of the magazine from black and white to color. In 1960 maintenance and construction articles filled the magazine and circulation was 2,800. By the end of 1969, circulation was more than 11,000 and some travel-oriented articles were being run in full color. Like the rest of the Department, *Texas Highways* hopes for bigger and better things in the 70's.

For a review of the 60's and a preview of the 70's, **Texas Highways** asked division directors to recount achievements in the past decade and to outline trends for the future.

Superlative Sixties

For the highway network of Texas, the decade just ended could be called the "Superlative Sixties."

Even a conservative review of the last 10 years cannot escape the use of superlatives—more . . . bigger . . . better . . . safer . . . more convenient. Even the problems were bigger.

But the decade was one of solid achievement for the Highway Department. To begin with, the state-maintained highway system is now some 8,400 miles longer than it was January 1, 1960. At the end of 1969, the designated Texas highway system was 69,300 miles.

"Our people did a magnificent job in the 60s," says State Highway Engineer J. C. Dingwall. "And the contractors did a fine job, too, despite rising labor and money costs. But even though we added many more miles to our highway system and improved thousands of miles we already had, we are always playing catch-up to the traffic demands."

When the 1960's arrived, there were just under five million motor vehicles registered in the state. This year the total will be just over seven million.

Dingwall said the Department was able to keep pace with the tremendous volume of engineering work only through the use of computers. Computers assisted in design work, said Dingwall, and increased the flow of plans to Austin. While work output was doubling in the past decade, the Department handled the tasks with fewer engineers than it started with in 1960.

Legislative pay raises near the end of the decade helped to slow the engineer drain, and a few of them even returned from private industry.

Dingwall pointed out that the trend in the 60's was for the Highway Department to play a greater role within the urban areas. Whether the Department continues the trend will depend on Congress, because the Highway Trust Fund Act will expire in 1972. A new bill must be passed to provide funds necessary to continue the work.

Perhaps the greatest achievement Dingwall looks forward to in this decade is completion of the Interstate system, a project conceived in 1956 that will be 20 years in the making. However, Dingwall points out, the section of IH 27 between Lubbock and Amarillo that was added to the system late in 1968 will probably not be completed until the late 70's.

When the Interstate Highway Act was passed in 1956, the Highway Department made a wise decision—to develop urban freeways first. This not only helped to solve the traffic problems, but it also helped to decentralize and to develop the cities economically. Some states are in traffic trouble now because they failed to develop urban areas first.

As far as priorities were concerned in the 60's, Texas' primary system was in a squeeze between the Interstate and farm-ranch systems. Dingwall says an important development in this decade will be the transfer of Department efforts to the primary system. He said that although Texas had 5,192 miles of four-or-more-lane-divided highways by the end of 1969, we will need at least 2,500 more miles in the next 10 years.

In 1967 the Department celebrated its 50th anniversary with a giant testimonial dinner—and a 192-page special edition of *Texas Highways* magazine. On the last working day that year Dewitt C. Greer retired after an unprecedented 27½ years as state highway engineer.

More emphasis was placed on highway safety features in the 60's than all the previous years in the Department's history. Research of the total highway technology paid off with such innovations as the breakaway sign support, light standard, and Texas Crash Cushion, all real lifesavers. The total research program took shape and grew in those years. Research will play an even greater role in this decade.

If the last 10 years could be called the "Superlative Sixties," then the 70's may well be called the "Superelectronic Seventies." Computers will have a bigger role in Departmental activities and the computer center at Camp Hubbard may become the information bank for the whole Department. Photogrammetry will be almost totally electronic, from aerial photographs to the finished plans. More and more electronics will be called on to take care of increased work loads with the same number of personnel. Consequently, the Department will need electronic technicians and repairmen.

1973 or 1974 will be a banner year for Austin-based employees. After 40 years in the same building, the Department will move into a new headquarters building within a block of the old one.

"We hope to let a contract by January 1971 for the new building," said Dingwall, "and it should be completed within two or three years. That means that sometime early in 1973 or 74 we'll be moving in."

Environmental effects, which were given high priority by engineers in the 60's, will receive more formal application in this decade. Noise abatement is high on the environmental list.

"The Department will also make intensive study of the mass transporta-

tion problems," Dingwall said.

He predicted that mass transit backers will press their attack and strive to drain off much needed highway funds. He added that the Highway Department will stand firm on the Texas Constitutional amendment against diversion of highway funds.

Whatever the superlatives for the 60's, Dingwall promises continued maximum effort for this decade.

"We will make every effort to improve everything we've done. And that means in all phases of work, from accounting to litter pickup.

"And there's one thing for sure. We'll need all the highways we can build—plus mass transit."

Finance Division

Last year, two divisions—Accounting and Aid—merged and reorganized under a new name, Finance Division. The merger, one of the more revolutionary recommendations of the Ernst and Ernst Financial Management Study, has eliminated a lot of duplication in Departmental bookkeeping.

The computer has been the key to the reorganization, and the accounting system is gradually becoming automated. The conversion should be completed within the next two years.

"Since the merger, we have been busy getting our records onto the computer," says Sam Huff, head of the new division. "Many of the Ernst and Ernst recommendations have already been implemented, adapting fiscal operations to modern computerized techniques."

Effects of the computerization are felt throughout the state. Payrolls are processed on the computer, and salaried personnel in the districts now receive paychecks only a day or so later than those in Austin. W-2's (wage and tax statements) are also produced on the computer. Heretofore, six or seven employees in each district sandwiched W-2's in between other chores for a month or so. When the reports were sent to Austin, half of Accounting Division was tied up in proofreading. Now everything is done on the computer, saving time all the way around.

"This relieved the districts and shifted the burden to the main office," says Huff.

Because of the computer, Finance Division is now able to provide more precise cost estimates, and better budgeting will be a bonus. Their cost concept, in fact, has changed.

"For instance," explains Huff, "we can now measure the exact cost per hour per employee to the Department. The means to this end, of course, is the time sheet, adopted in September of 1966. Before then, we had no way to measure this."

Last year, four remote terminals were installed as part of D-3's data processing section. The terminals will be used exclusively for input of the accounting operations, including transactions from the field. Data is keypunched into cards and transmitted over telephone wires from the remote terminals to the computer center at Camp Hubbard. The cards are read and processed by the computer, and a report prints out downtown.

"We get results in five minutes on some jobs that used to take half a day," the finance engineer said. "The time saved in not having to hand carry cards to Camp Hubbard anymore is enormous."

Contract estimates are also run on the computer, an offshoot of the sixties. In January, bids were tabulated for the first time via the remote control units, and they will be from now on. Instead of being keypunched, however, bids are typed on typewriter terminals and the low bid later prints out on a special piece of equipment.

The Department has 16,000 pieces of equipment. Record keeping was a long and tedious manual chore. Now the districts can code information on their key punch machines, send the cards to Austin, and reap the benefits. Warehouse cost distribution is a coming thing.

Long-range planning is, too.

"With our new automated accounting techniques, we will know how many jobs can be let without running out of money. Keeping up with expenditures will be easier than it has in the past," predicts Huff.

The future for Finance Division—and the Department—holds great promise because of the computer. Huff sees the availability of more information for use on all levels of management, more up-to-date processing of records, and yes, even new and better equipment.

Equipment and Procurement

John Nations, director of Equipment and Procurement Division, doesn't need a crystal ball to tell him what the future holds for his division. The achievements of the 60's will be the trends of the 70's, and 'safety first' seems to be the keynote for both decades.

"We're interested in safer equipment, not only for the individual operators, but for the safety of the motoring public as well," says Nations. "Innovations of the 60's such as tinted glass, power steering, and self-leveling seats reduce fatigue and improve operator performance."

During the past decade, D-4 evaluated equipment still on the manufacturer's drawing board or in the testing stage, including new-style mowing and litter removal equipment. The division assisted in development and construction of the gyratory soil press and other testing equipment to provide more reliable test data.

For the first time, the division demonstrated new equipment such as the safety tractor-mower and other specialized equipment made necessary by expanding fleet operational requirements. Equipment was shown at maintenance conferences last year, giving fieldmen a firsthand look at the new equipment.

By 1970, the division had also developed and constructed equipment to meet the new barricade standards, providing added safety to Departmental personnel and the traveling public. This equipment includes traffic cone retrievers and dispensers, signs, cones, and barricades which are trailermounted to provide a complete barricade.

During the past decade, D-4 turned to the computer to make maximum use of equipment. Studies have been made to see how the computer can best expedite maintenance and dissemination of records about equipment performance.

Looking ahead, Nations says, "We

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will continue efforts to provide safe and sound equipment and to expand computer applications into the equipment field. This expansion will possibly include program-control of major equipment.

"We will continue to participate in studies and evaluation of engineering instruments to provide our engineering staff with the latest and most up-to-date equipment and to insure the most diligent expenditure of highway funds," adds Nations.

By 1980, Equipment and Procurement Division hopes to have every piece of equipment—from motor graders on down—air-conditioned and automated.

Bridge Division

"Probably the most notable accomplishment of Bridge Division during the past 10 years has been just keeping pace with the increasing demand for plan preparation created by the massive highway program," says Clyde Silvus, bridge engineer.

For example, the percentage of bridge projects (projects involving railroad grade separations or for which more than half the cost was in bridges) rose from 21 percent in 1959 to 40 percent in 1969.

During the four and a half-year period from May 1963 through December 1968, over 4,000 individual bridges, not including box culverts, were let to contract. (By definition, a bridge is any structure over 20 feet long.)

The computer has been the equalizer. Programs computing stresses and deflections in bridge members have been developed and used extensively, but the most valuable asset has been in solving geometric problems. The multitude of dimensions and elevations necessary to construct the complicated curved structures which have become common place in the last few years can be calculated in minutes now. Hydraulic computer programs have also been developed to analyze the flow of water through drainage structures, saving the Department thousands of dollars and hundreds of man hours.

Full crown-width structures came of age in the 60's.

"We had been building some bridges with full-width shoulders for 10 years before official sanction came in 1965," says Silvus, "so we were pleased when the Department of Transportation, upon AASHO's recommendation, approved crown-width structures."

During the last decade there was a gradual lengthening in span capabilities of precast, prestressed concrete beams and girders. In 1960, the maximum practical span length for Texas fabricators was around 80 feet. By the end of the decade, spans of 135 feet were being constructed successfully with precast, pretensioned beams.

"It can be conservatively estimated that expanded use of prestressed concrete saved the state of Texas over $5 million in 1969 alone," says Silvus. "While such changes have been gradual and undramatic, they have nonetheless played a major role in highway bridge economy."

The cast-in-place posttensioned concrete slab, used sparingly by the Department until 1960, also came into its own. Economical and esthetically pleasing, this construction offers minimum thickness structure for spans up to about 100 feet. It is most applicable for high-type facilities in urban areas where right of way costs are excessive and drainage problems acute, says Silvus.

Texas' longest bridge, the Lavaca Bay Causeway (two and two-tenths miles), was dedicated in July 1961. In 1965, Texas had 19,000 bridges including 370 completed during 1965—an average of more than a bridge a day. By the end of the decade, 20,873 bridges had been constructed, averaging more than a bridge a day for the last five years.

What does the future hold?

"Because of rising field labor costs, greater use of precast concrete elements must be used if structure economy, along with quality, is to be maintained," asserts the division head. "Complete superstructures can be cast in small pieces in the yard, hauled to the site, then joined together to form long-span structures."

Improvement and expansion of automation in bridge design and plan preparation (including mechanical plotting and reproduction techniques) will enable D-5 to greatly expand production capacity. Continued plan standardization will help achieve economy in bridge cost as well.

Double-deck facilities and more extensive use of existing highway right of way above and below existing freeways is in the offing, too, because freeways in most cities are overcrowded.

Construction Division

The cost of living isn't the only thing going up. Inflation also hit the road-building industry in the last decade. Bigger construction costs called for bigger contracts.

The amount of contracts awarded by the Department doubled in the past decade, says Jed Robinson, head of Construction Division. In 1960, approximately $217,460,000 was awarded; in 1969, the figure rose to around $437,560,000. Lettings averaged $31 million a month in 1969 and $20 million a month in 1960.

Some individual contracts reached $10 million and above in recent years. The biggest entire monthly letting of the 50's was only $9.6 million.

The computer is changing everything, even lettings, says Robinson. Ten years ago it wasn't used at all, but today, tabulating, figuring, and printing is done by the computer. Not only are calculations made faster, but they are more accurate.

Robinson also points to progress in employment opportunity during the past decade. Federal-aid contracts now contain an equal employment opportunity clause.

"We in this office and our people in the field follow through to see that contractors are abiding by the clause," he says. "We are getting more involved in this all the time."

Construction Division has seen changes in other areas, too. During the past few years, the Department has become more pollution conscious. In 1968, formal directives spelled out specifications designed to minimize pollution of Texas water.

Automatic batching for concrete and asphalt paving plants and automatic and electronic controls for road-building equipment were developed during the past decade, too.

A major breakthrough in "fairly recent years" has been development of the slip form concrete pavement. Conventional pavement needed steel forms down the side of the road, with finishing equipment strung out behind. Almost fully developed, the slip form is still being refined.

What does the future hold?

"A lot depends on what Uncle Sam does, when the Interstate System is completed in 1975," says Robinson. "We're in a slow-down now. The President says, 'Take it easy,' and we are."

Highway Design Division

The single outstanding design theory of the 60's, says Bob Lewis, director of Highway Design Division, was that the engineer became more aware of safety features. He turned to saving people rather than the Department's fixtures.

"We will continue to stress safety in the next 10 years," says Lewis, "but we will relate the highways to other aspects of society, such as noise and other forms of pollution. Highways will also be related to other forms of transportation such as the Fort Worth-Dallas Regional Airport."

Was the division able to keep pace with the demands brought on by the 2.5 million additional vehicles added to the highway system in the last 10 years?

"Our goal has been level of service. And I think we've kept pace with the vehicle explosion. By level of service we mean a reduction in travel time over the same distance, a smoother ride, fixed objects farther from the road, greater efficiency at peak traffic hours."

In 1960 the Department let contracts totaling $237.4 million in highway construction. Last year the figure was $489.7 million. The increase in highway work was accomplished with about the same number of engineers over the 10-year span. Now there is a lot more paper work to preparing projects to let.

"Engineers now have to do more work for the same job than they did 10 years ago," says Lewis. "A resident engineer has to submit public hearing studies, urban renewal proposals, and he has to work closer with local governments."

Lewis listed some of the changes in highway design during the past decade:

- Better techniques for predicting level of service
- Improved design of interchanges, particularly the high-speed, directional patterns
- Upgraded geometric design criteria, such as the degree of curvature, stopping sight distance
- Improved illumination criteria, higher poles and more powerful lights, and median installation of light standards

Workmen erect signs to mark Ranch Road 1, designation of the highway passing by the LBJ Ranch, home of former President Lyndon Johnson, on the Pedernales River Loop off US 290 west of Austin. The road was improved in 1964 in anticipation of a much greater volume of traffic after the Texan assumed the Presidency.

- Breakaway sign supports and light standards
- Texas Crash Cushions
- Other safety features—obstacles moved farther from shoulders, "Texas Twist" guardrail (buried ends), flatter side slopes, median barriers and headlight glare fence on most narrow median freeways, more attention given to skid resistant surfaces.

Lewis predicted greater things for the 70's, including:

- Improvement of driver communication through the use of radio, electronics, holographic signing, and computer controlled systems and signs
- Computer controlled freeways and street systems
- Combined transportation systems such as fringe parking and buses
- More cushion and impact attenuators, for automobiles and on obstructions
- Use of precast, prestressed sections, more off-site construction and placement of precast materials
- Greater use of synthetic materials.

More design work loads will be dumped into the computer's lap in this decade. In cities of 250,000 and more the freeway-street networks will be run by computers. A city of 250,000 could possibly have all its traffic lights operated by one computer. Highways will be double-decked where necessary, but design engineers do not foresee this as a solution to right of way or traffic problems.

The Department will relate more to bus transportation, both city and intercity.

Lewis said it will take one-third longer to build a section of highway in the 70's than it did 10 years ago because of added public hearings, paper work, and studies of environmental effects.

"We will have to study projects from a conservation angle, natural beauty, parks, wild life, you name it. We will work more closely with local groups. I think most of our problems can be worked out by improving our communications with the public."

Lewis paused for reflection.

"You know, in a lot of ways highway building is getting to be sort of an intangible."

Superlative Sixties

Materials and Tests

As one of the oldest divisions in the Department, Materials and Tests Division has just completed one of the most productive decades since its beginning in 1919. And, according to A. W. Eatman, director, "It's just the beginning."

Development of new materials played a major role in the past decade. New products included fast-dry traffic paint, color paints for use on bridges, new procedures for testing illumination equipment, and a moisture detection gauge for use on bridge overlays. The division also designed a motorized gyratory molding machine for making asphaltic concrete specimens and subsequent development of a large gyratory press for use in design and control of asphalt stabilized base.

A study of bridge deck deterioration resulted in 20 major changes in specifications for structural concrete, Eatman said. Also, hydrated lime, one of the oldest structural materials, was used extensively in base stabilization. Epoxy resins, one of the newest materials, found extensive use as an adhesive, bonding agent for concrete, and as a highly resistant paint.

The division also accepted new methods of measuring asphalt viscosities in scientific terms rather than empirical, the density control of base construction, and the triaxial design of bases for thickness of component parts and quality of base material.

Eatman noted that the division obtained the first electronic analytical equipment—a gas chromatograph for the analysis of resins and solvents, and purchased the first high-speed testing machine capable of speeds approaching actual highway loadings. Also established was a certification section to assure quality of testing equipment.

For the 70's, Eatman predicts the trend will be to utilize more nondestructive tests and equipment such as ultrasonic and nuclear.

He also predicts that several new systems will be installed. These include a complete instrumental analysis system which will include both ultraviolet and infrared spectrophotometers, automatic freeze-thaw equipment for determining durability of concrete and aggregates, installation of linear-traverse equipment to study hardened concrete, and a complete petrographic laboratory for the geologic studies of aggregate and concrete.

In general, Eatman says, "The emphasis will be on the development of faster testing methods and equipment to keep pace with the construction rate."

Planning Survey

From functional classification of Texas highways to computerization, Planning Survey Division has passed through a "decade of progress," says Joe Wright, director.

The latter part of the decade saw streets, roads, and 247,000 miles of highways classified according to the functional importance of routes. The classification will be used as a basis for realigning federal highway programs to better meet future needs and priorities. Road systems, up to now, generally have been classified according to the jurisdiction.

Another method of division is by administrative elements. Under the functional concept, new terms will be used, such as arterial (Interstate and long-range roads), collector (farm to market roads), and local (street and county roads). Functional survey also means a good start toward planning the highways of 1990. The data collected will make possible a master map and plan showing the needs 20 years from now.

The Department's revolutionary new breakaway signs gained national attention during the 60's. Crash tests proved the worthiness of the signs, and by July 1967 more than 100 persons had walked away from accidents after their cars had struck the breakaway supports.

Traffic counting equipment, designed and constructed for use in weighing vehicles in motion, was also developed and utilized. The equipment, which can be interfaced with high-speed computers for the development of the final analysis, was installed at all permanent traffic recording stations in the state. Without this process, it would take 28 persons a month to analyze traffic records from the 156 locations around the state. With the new equipment, it can be done in 15 days by four persons.

The urban traffic section completed 21 comprehensive origin-destination studies in towns over 50,000. The largest cities studied were Dallas-Fort Worth, with 28 months spent conducting the survey.

Planes were used for the first time in reconnaissance, partial inventory, and map checks of general county highway maps. This eliminated use of cars and large survey teams, saving time, money, and manpower. The division also began using planes for air reconnaissance of natural disaster areas.

Other developments saw the use of a railroad grade crossing log for determining the number of trains and cars passing over a railroad per day, making it possible to figure accident rate at any one spot.

For the future Wright sees complete computerization of all records and establishment of direct access to basic data files by district and division.

"The 70's indicate a much heavier work load to obtain and disseminate the data necessary for the Department progress and planning, design, and construction of additional miles of highway system," he said.

"We also see many improved procedures and methods in acquiring and disseminating our information."

Motor Vehicle Division

The past decade proved to be "challenging to say the least" for Motor Ve-

hicle Division. According to R. W. Townsley, director, "It furnished the momentum that will carry the division into the 70's."

Along with the challenge came several changes, the most complex and far-reaching being automation—the computer revolution.

Computer conversion was not overnight. In 1965 the division completed a feasibility study of its routines that showed automation was needed, and in 1967 a committee selected the IBM 360 computer system for use in the Department.

The division's first goal was issuance of computer titles followed by conversion of current records to computer storage. By the latter part of 1969, the division had printed and mailed registration renewal forms to car owners.

Vehicle owners will find the registration process much faster and easier, says Townsley. For the division, the computer will improve the accounting, maintain an up-to-date inventory of all licenses and provide statistical information for law enforcement, industry, and county tax collectors.

As a part of the operation, automobile dealers, insurance, and finance organizations will also have access to the records from computer storage by way of an inexpensive teletype in their offices. Presently there are some 11 tax offices tied into the computer, several police departments, and the Department of Public Safety.

Several laws passed by the legislature gave the division new responsibilities. The Salvage Yard Law, passed in 1961, required all wrecking and salvage dealers to remove license plates from junked cars, and keep them and the car's title safely stored until a motor vehicle representative could collect them. The law was passed to head off misuse of the license and title on stolen cars.

The Dealers License Plate Law set up certain rules for dealers to follow after purchasing dealer tags. Division field men are required periodically to check dealers in their district for misuse of the special license.

Personalized license plates were also issued for the first time during the decade. The original idea came from Governor John Connally, who established the personalized plates program as a source of additional revenue. Townsley noted that the plates had not sold as well as expected. Last year only 37,000 personalized plates were issued.

Also during the decade, the division issued the first reflectorized license plate and the second license plate with a slogan, HemisFair. The other slogan was used during the Texas Centennial in 1936.

Townsley expects the computer to play a large role in the future with the number of vehicles increasing yearly. Presently, the number is increasing at a rate of 200,000 to 250,000 vehicles a year.

"For 1979, we estimate there will be approximately 10,477,200 vehicles registered in Texas. So, you can see the computer will play an important part in helping us keep track of these," he said.

"Through use of the computer, we are now in a better position to offer more and better public service."

Personnel Division

When Drew DeBerry took the helm of Personnel Division on December 1, 1966, obtaining a realistic salary and wage schedule, reversing the manpower drain, stepping up the recruiting program, and developing more in-service training topped his "to do" list.

In August 1963 more than 41,500 miles of the Texas highway system came under the new 70-miles-per-hour daytime maximum speed for passenger cars. Here, a Department employee replaces the old speed sign with a new one.

By the end of the decade, most of his goals had been realized.

Although the complexity of projects and the amount of construction has greatly increased during the past ten years, the Highway Department has been able to handle the increased work load because of automation. It has been able to do twice as much work with only 15 per cent more personnel.

Moreover, the number of engineers decreased in the early 60's because industry and other governmental opportunities seemed more attractive. Since 1967, the Highway Department has regained some engineering strength.

"We're hiring engineers back from private industry. We're competitive now," says DeBerry. "That doesn't mean we will be competitive in the future, but we are now. There is still a critical shortage of young engineers."

As one means of combatting the manpower shortage, and as part of its recruiting efforts, the Department expanded its cooperative engineering program in 1967, to interest college students in Departmental careers.

"We have quite a few co-op students in the districts," says DeBerry. "They work six months and go to school six months."

Job classification, in 1961, paved the way to a more equitable wage scale. A long-awaited pay hike in 1967 gave employees an overall increase of about 22 per cent. Hourly employees received commensurate pay increases, too.

Also in 1967, sick leave was expanded to include illness of a member of an employee's immediate family, mileage allowance was raised from eight cents to 10 cents a mile, and travel allowance increased from $12 to $14 a day in state and to $17 a day out of state.

Last year, vacation benefits increased. Those with 15 years service now receive 15 days of vacation; 20 years, 20 days. Retirement benefits rose about 10 per cent. The Legislature approved payment to survivors of an employee's accumulated vacation leave and one half of accumulated sick leave.

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An additional 15 days leave was also approved for military service in 1969.

Negotiations are underway to obtain liability insurance by the Highway Department for employees operating state equipment. This year the Department should also be able to offer employees group health insurance with state participation in premium cost.

Recognizing its importance, the administration hopes to increase training and educational benefits for employees through two new programs: the State Employees Training Act of 1969 and the new Public Service Careers Program.

"The Highway administration has not jelled on these yet," says DeBerry. "Guidelines still have to be formulated."

DeBerry foresees continuing emphasis to assure that applicants are employed, and that employees are treated during employment without regards to race, religion, sex, color, or national origin.

Efforts will continue, says DeBerry, to assure employees fair and equitable salaries and wages. Provisions have been made for merit raises in subsequent years.

DeBerry points out that at the start of this decade the Department can boast an attractive wage scale, good working conditions, employment stability—and hope for a bigger and better tomorrow.

Secondary Roads Division

Growth, diversification, and the assumption of a new role in the highway system highlighted the past decade for Secondary Roads Division.

Under the direction of H. L. Arno, the division's network of Farm to Market Roads grew from 32,800 miles in 1960 to almost 40,000 miles by the end of the decade.

Numerous new reservoirs and lakes throughout the state prompted water-oriented recreational sites and a need for access to these areas. From Lake Meredith in the panhandle to Toledo Bend Reservoir in deep East Texas and from Pat Mayse Reservoir in North Texas to Amistad Reservoir in Southwest Texas, suitable access roads were needed.

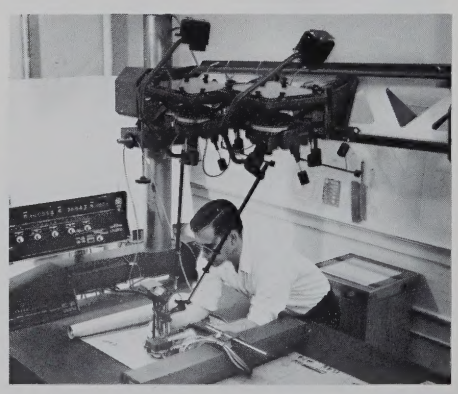
The Department began utilizing the FM road to provide paved roads from highways to public recreational facilities. These roads now link 163 of these facilities with the main highway system, and provide motorists with paved access to public recreational areas.

Other FM roads became known as scenic roads, industrial and urban roads, and mine to market roads. Each road had a different function, but together they caused a tremendous economic impact for Texas.

A scenic road in Brewster and Presidio Counties, stretching 29 miles along the Rio Grande near Big Bend National Park, offers tourists a panoramic view of the area. Mine to market roads offer easy access to isolated mining areas in West Texas and industrial and urban roads provide industrialization in virtually every part of the state.

Boat ramp construction also came under the division's supervision when the Water Safety Act of 1959 authorized the Department funds from boat registration fees (above those needed for administrative cost) to construct and maintain boat ramps.

In 1969, the Water Safety Act transferred the boat ramp responsibilities to the Parks and Wildlife Department.



The decade saw many new timesaving devices introduced into Automation Division's photogrammetry section. Here, Larry D. Stanford, engineering technician IV, uses an H. Dell Foster Digitizer to obtain cross section data.

But in the years it was under the division's auspices, some 121 ramps were constructed in 78 different counties.

With the advent of the 70's, Arno looks forward to the FM system opening up new industrial, scenic, and recreational opportunities for the state.

He says, "The most recent trend for our division is the development of recreational access roads throughout Texas."

Right of Way Division

Relocation assistance payments for displaced persons had a major impact on Right of Way Division during the past decade, and, according to W. B. Averyt, assistant director, the full impact is yet to come.

With court rulings, the nearing completion of the Interstate system, and computerization shadowing relocation assistance, Averyt termed the past decade exciting and eventful.

Beginning in 1962, federal law provided for verbal assistance and payment of moving costs for displaced persons. Texas, under state law, was limited to verbal assistance. In 1968 the present program was implemented by a change in federal law. Texas complied and in April 1969 relocation payments actually began.

The program developed after Congress made a three-year study to determine the burdens people encountered because of loss of property and receiving nothing but cash value of the property.

Displaced persons must be furnished with decent, safe, and sanitary housing equivalent to or better than the one they moved from, Averyt said. The cost of the program during the first year was estimated to be approximately $7,000,000. He also noted it could have considerable effect on the ability to move the highway program if adequate housing can't be found for dislocated people.

The program is still being studied by Congress and several bills proposing changes in the act are being discussed. A. H. Christian, division director, is scheduled to testify before Congress as to AASHO's right of way committee's position on two of the bills.

Court rulings also had a major im-

pact on the Department. One of the most important was the Meyer's case in Houston which confirmed that on partial land takings, if the owner elects to waive damages to his remaining property the part taken will be valued as a separate or entire tract of land. Other important rulings held that in substantial impairment of access the owner is entitled to compensation even though no land is taken; for the state to obtain title to improvements located on a tract being acquired by way of easement, the instrument of conveyance or judgment must so specify; and that since school property has no market value in the real sense, schools would be entitled to compensation equal to construction of any necessary building to restore the remaining school to the same or equal facility that previously existed.

During the decade, computers were used for the first time to check field note descriptions of right of way parcels and are presently being used in all the division's accounting, pay processes, and statistical data.

A division manual was also compiled during the decade. Evolving from a small volume, the manual now contains two sections on right of way procedures and separate manuals on appraisal and appraisal review, a utility manual, and negotiation handbook manual.

Aerial photography was also used for the first time to minimize efforts of survey in the field and to determine land ownership.

For the future, Averyt says the Interstate completion and the possible expansion of relocation payments will have the most effect on the division.

"What the future holds for us depends a lot on the laws passed by Congress about a new highway system for 1975 and beyond. They are working on a new system now—just what that is, we don't know yet."

Travel and Information Division

In 1959 the Legislature authorized the Highway Department to promote tourist travel to and within Texas through travel literature—photographs, movies, brochures, pamphlets, and press releases.

By October 1960, the Travel and Information Division had produced its first four-color travel brochure, and called a press conference in the main building to tell the world about it.

For the next 10 years, under the direction of Tom H. Taylor, travel promotion and Departmental literature flowed from the division. In 1963 the division came out with a movie about the evils of littering; first travel movie in 1965 (more than 24 million persons have seen it); big, colorful posters produced that same year; a 208-page travel handbook in 1966; Ten Travel Trails of Texas brochures in 1968; and in 1969 a new travel movie and a "Flowers of Texas" folder. Also in 1969, the division developed slide shows, dual and single projector, of the travel trails.

In 1960 seven tourist bureaus were operated at key entry points to the state. By 1969 all had been rebuilt, most of them on new location on Interstate highways or freeways. Four new bureaus were added during the decade —Gainesville, Amarillo, in the Capitol building (at the governor's request), and the Judge Roy Bean Visitor Center at Langtry. A new bureau is planned on US 271 north of Paris for travelers coming into Texas off the Indian Nation Turnpike in Oklahoma.

Taylor said that in 1960 there were only 85 pieces of literature, including Departmental publications, to give to visitors. In 1969 there were between 400 and 600 individual pieces. About two million pieces of travel material were distributed in 1960 through the bureaus and mailed from the office at Camp Hubbard. Last year more than five million pieces produced by the Department were given out, including more than one million highway maps. In addition, three million pieces produced by chambers of commerce, tourist attractions, and state and federal agencies were distributed.

This all-weather boat ramp and parking facility at Lake Tawakoni was the first of 121 to be built by the Department. Under a legislative act of 1969, control of the boat ramp facilities was passed to the Parks and Wildlife Department.

During the decade, the official highway map evolved from a promotional piece with color photographs on the back to a larger scale map with city-area map insets on the back. Since travel materials were being produced by the division, the map could become more specialized with more travel information for the motorist. Taylor says that in the near future the map may not be adequate. As more people get more leisure time, the demand for more travel information may increase, creating a demand for supplemental maps.

Taylor said that 8.6 million visitors came to Texas and 16.5 million in 1968. (Figures for 1969 are not yet available.) These all came by automobile. Taylor predicts the rate of increase for visitors will be even higher in the 70's.

In 1960 press releases written in the division were more like announcements, short on detail, interpretation, and background. In 1969 the division wrote scores of releases, sending them to 660 newspapers and 340 radio and television stations. The information section also furnishes monthly scripts and tapes to the stations. *Highway News,* a monthly publication for Austin employees, won four awards for excellence in the decade.

The division's efforts were recognized by many organizations during the decade. In 1968 the National Association of Travel Organizations gave the Department an award "for dividing the state's overwhelming size and its profusion of tourist fare into manageable and attractive itineraries . . ."

"The Great Challenge," a highway needs study for the next 20 years, was singled out by the American Association of State Highway Officials as the type publication that all 50 states should emulate. The Texas Legislature passed a join resolution in 1969

Superlative Sixties

commending the Department for its "effective and efficient conduct of the collateral phase of the official program to encourage, extend and develop the visitor industry in the State of Texas."

Several states studied the Department's tourist bureau operations prior to establishing their own centers.

Taylor believes his division will be making more movies, both Departmental and travel, in the 70's. For example, filming has just begun on the gigantic 10-lane Houston Ship Channel Bridge.

"We may also make training films in the future," says Taylor. "Right now we are working on another litter film as part of our continuing program against this problem. The Commission has asked us to take over the old Lundberg Bakery on the site for the new highway building, so we will be operating it as a tourist bureau in the 70's."

Taylor foresees a greater need for public information, especially in the districts, in this decade—and pledges to meet the challenge with all the resources of his division.

Maintenance Operations Division

More than half of the Highway Department employees are engaged in maintenance operations. And maintenance forces won a personal victory in 1969 when titles and wage brackets changed, says Archie Sherrod, chief engineer of Maintenance Operations Division. Laborers became maintenance men and technicians.

During the past decade, D-18 and the Department worked more closely with other agencies, especially on such things as boat ramps, roads to parks, and parking entrances to hospitals.

Highly mechanized equipment also came into its own. Special mowing equipment for use on slopes reduced hazards to operators and motorists. High-capacity loading equipment, such as gradalls and mechanical aggregate spreaders, expanded use of lay-down machines on small asphaltic concrete maintenance jobs, and automated traffic signals were byproducts of the decade.

Surveillance of freeways, researched in the 60's, became operational by the 70's.

"We were just getting into radio when the 60's began," continues Sherrod, "and we see expansion of the two-way radio communication system for construction and maintenance forces."

Installed in the latter 50's and modernized in the 60's, the statewide radio system has proven invaluable in emergencies and in daily maintenance chores.

"The Division gave greater thought to the safety of the traveling public during the past decade," says Sherrod. Lifesaving innovations such as the Texas crash cushions, breakaway signs and lighting standards, and the skid test machine were developed jointly with other divisions.

Two natural disasters — Hurricane Carla in 1961 and Hurricane Beulah in 1967 — severely tested local maintenance forces, bringing them wide acclaim.

Also winning national recognition was their roadside beautification program. The first comfort station, in one of some 80 new safety rest areas planned for the Interstate system in Texas, opened. By the end of 1969, Texas had one of every seven roadside parks and safety rest areas in the nation.

In the latter part of the 60's, Maintenance Operations Division initiated regional conferences where district maintenance engineers discussed mutual problems.

El Camino del Rio—The River Road—which stretches some 66 miles through the majestic and rugged country of West Texas, was completed during the early part of the decade. The road, running between Presidio and the Big Bend National Park, offers motorists a majestic view of the area.

"There is a growing need for more employee training programs," says Sherrod.

Along with the commendations have come complaints.

"We've been getting more complaints lately than ever before," says Sherrod. "People have learned they have access to the Highway Department, and they are not content to call the local man any more. They want to be heard.

"The public is demanding a higher degree of perfection, in both facilities and maintenance. They want better pavement, signing, drainage, and lighting. The public is also demanding additional services — and we will have to meet those demands. Actually, that is good because it will push us into doing our best."

Automation Division

If computerization is the key word for Department progress in the 60's, then Automation Division holds that key. Born on December 1, 1965, the division combined the duties of the reproduction and computer sections of Operations Division and the photogrammetry section of Highway Design Division. Hubert Henry, who was head of photogrammetry section, was named division director.

Henry said the computer section, which now operates 24 hours a day seven days a week, had only an old vacuum tube computer in the basement of the main building in 1960.

"We really didn't know how we were going to use it at that time," he recalls. "The work we used the computer on was very limited."

Before the computer center was formed at Camp Hubbard, two more computers were acquired, each one faster and better than its predecessor.

By the end of 1969, Automation Division was doing statistical analysis for Planning Survey, had taken over more fiscal work, Right of Way accounts had been integrated, all Insurance records were being fed to the computers, and the biggest job of all—

complete title and licensing system for Motor Vehicle Division.

Computers now handle major tasks for Design Division. Problems are relayed to the computers from the field and the answers are flashed back within minutes. Houston Urban has a machine that draws profile plans as the computer at Camp Hubbard sends the coordinates to its terminal. Some district offices may get a similar setup in the near future.

Henry said his division is connected with tax collectors' offices by teletype to relay registration and title information. Motor vehicle information can also be obtained by the Department of Public Safety.

Photogrammetry advanced from one Kelsh plotter in 1960 (used only to check plans submitted by private contractors) to an automated system undreamed of 10 years ago. In the beginning, photogrammetry was struggling to get its method of surveying and mapping accepted by the districts. The Transmountain Road north of El Paso was the high-water mark for the section. The rugged terrain was surveyed, the route selected, plans drawn, and earthwork paid for—all from aerial photographs.

"Photogrammetry has become a part of the total integrated engineering system," says Henry.

Reproduction section has also kept pace with giant demands created by other divisions and with those from photogrammetry. Bookbinding of highway reports tripled during the decade and the extra work was accomplished with fewer employees than the section had in 1960. Reproduction also had to meet the demands of photogrammetry for processing and printing the aerial photographs.

Computers will work even harder for the Department in the 70's, says Henry. He foresees a giant information file for the entire Highway Department, all located, of course, in the computer center at Camp Hubbard.

"Paper files will almost be a thing of the past," predicts Henry. "Rapid access will be the key. All this information is around now, but each division has its own files. In the future we'll have that information and you will have a terminal where you can make inquiries."

Communications will be expanded with more remote terminals (television screen or print board). Information such as when a road was constructed, design factors, costs, the maintenance required—all will be available from the information center.

Henry said counties may be keeping their records in the center and can get information through high speed terminals (20,000th of a second or less), which can be by video or printout.

There will be more automation of photogrammetric operations. Plotters will scan aerial photographs electronically (there will be no operator as there is now), the map will be interpreted, and a digital model will be built in the computer.

Henry sees no limit to the future. "You can dream anything . . . It just depends on how big you want to dream."

Insurance Division

Comprehensive safety programs, safety awards, and improvements in workman's compensation benefits formed the nucleus of a productive decade in Insurance Division, says C. G. Curtis, director.

Employee safety was the prime target of the division. A Fleet Safety Program entailing the road testing of drivers, checking all driver records, maintenance of permanent driving records, psychophysical test of drivers, and a continued training and testing program was initiated. The program is designed for employees who drive a majority of the time, including heavy equipment operators, survey, maintenance, and construction crews.

Hubert Henry, left, director of Automation Division, and Ted F. Ball, head of data processing, look over a computer output listing at the Camp Hubbard computer center. The computer, which the Department began using in the early 60's, is expected to play an even bigger role in the 70's.

Safety was also emphasized through a statewide safety program that included regular safety meetings of individual crews and an educational program on personal safety and motor vehicle safety.

The division also assisted in developing signing and barricading standards that offer better protection for employees and the traveling public. Other safety programs included installation of seat belts in all vehicles, the training of heavy equipment operators in preventive maintenance, and a defensive driving program. Some 340 instructors and 11,000 employees have received training under the latter program.

The Department's safety record won the Award of Honor two times and the Award of Merit three times. "On a national scale this record has equaled or passed the safety record of other highway departments reporting to the National Safety Council," Curtis said.

Workman's compensation benefits also received a boost during the decade from a maximum of $35 per week in 1960 to a maximum of $45 per week in 1969.

For the future the division has been assigned the responsibility of administering the liability insurance program. Curtis says the Torts Claim Act passed by the last legislature will have a significant impact on the division. The act gives persons the right to sue the state for bodily injury damages resulting from any kind of accident involving liability on the part of the state.

The legislation gives the Department permission to purchase certain insurance coverage for its employees. This coverage is for the protection of employees for liability that might arise in the operation of state-owned equipment.

"We will continue to promote safety programs in the 70's," Curtis said, "with a greater emphasis on accident prevention." ■

The Sky's the Limit

More than a dozen galvanized octagonal steel poles, each towering 150 feet in the air and forming the keystone of the most advanced highway lighting system in the country, have been erected by the Highway Department at two locations in Dallas.

The galvanized poles were designed by engineers of the Department with the basic design concept coming from E. M. Carl of Highway Design Division. The lofty giants anchor the two ends of an 8.9-mile section of Interstate Loop 635 at the north edge of Dallas.

Five of the jointed poles illuminate a three-level directional interchange with IH 35E at the west end of the section. Eight more light up a two-level partial cloverleaf directional interchange with US 75 at the east end of the project.

Lights for the rest of the busy stretch of superhighway are mounted in the median area on 50-foot galvanized steel poles installed inside two parallel lines of galvanized steel flexbeam guardrail. There are 164 of these shorter poles in the project.

The 150-foot poles were fabricated in four sections, hot dip galvanized inside and out, and shipped to the jobsite. The sections were telescoped together with hydraulic jacks at a registered pressure of 2,000 pounds.

Design criteria required that each section overlap the other by at least one and a half times the diameter of the telescoped sections at the junction ends. There was no field welding. The four sections of each pole range in weight from 986 to 5,657 pounds. Total weight of each pole is 12,000 pounds. The octagonal poles taper from 27.5 inches in diameter at the base to six inches at the top.

Each pole is equipped with a circular steel ring assembly upon which is mounted ten 1,000-watt floodlights. By means of an internally mounted electro-hydraulic winching system, the externally mounted ring assembly can be lowered to ground level for servicing.

Department engineers designed the poles to withstand winds up to 67 miles per hour, as specified by the latest AASHO isotac wind-loading curves for the Dallas area. A prototype of the pole used on the Interstate Loop 635 project was tested at the research facilities of the Texas Transportation Institute at Texas A & M University as one phase of a cooperative illumination research project. Sponsors for the research were the Highway Department and the US Bureau of Public Roads.

Each of the 50-foot poles installed in the median supports two conventional 1,000-watt lights on opposing 12-foot mast arms.

Height and spacing of both the 50-foot and 150-foot poles were determined from photometric data developed through extensive illumination research studies at TTI. The 50-foot poles generally are spaced about 300 feet apart, the 150-foot poles from 600 to 700 feet apart.

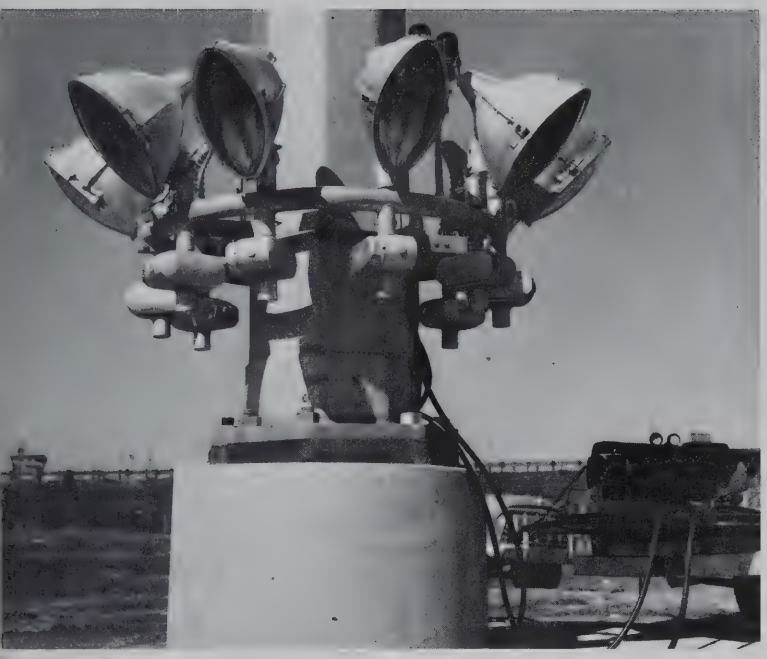
Photometric data from the illumination studies show that a 150-foot mounting of ten 1,000-watt floodlights (when equipped with clear mercury vapor lamps and set at an angle of 45 degrees) will produce an illumination intensity of 0.05 horizontal footcandles at a radial distance of 540 feet from the pole.

This results in a circular area of illumination having a diameter of about 1,800 feet wherein the intensity of illumination ranges from 1.0 horizontal footcandles near the base of the pole to 0.05 footcandles at the perimeter of the circular pattern of illumination at ground level.

Thus, by spacing the poles from 600 to 700 feet apart, it is possible to secure a minimum cumulative lighting intensity of about 0.3 to 0.5 horizontal footcandles at the midpoint between adjacent poles.

According to E. M. Carl, Texas is the only state in the nation that utilizes the winching system to lower the lights. He added, "We think the poles in Dallas are the highest in the world."

However, Carl said that erection of several 175-foot poles is already planned for Houston and that future heights could reach 200 feet. ■



An internally mounted electro-hydraulic winching system makes it possible for the ring assembly supporting the lights to be lowered to the ground. Once down, workmen can repair any of the ten 1,000-watt floodlights mounted on the 60-inch diameter ring.

The size of the large concrete base needed to secure the towering poles to the ground can be seen by comparing the base with the man standing beside it. The octagonal poles taper from 27.5 inches in diameter at the base to six inches at the top.

Night quickly becomes day when the lights shed their illumination over the roadway. Each light illuminates a diameter of about 1,080 feet.

Corpus Christi Caller, in a picture caption—Work on the four-lane bridge across *Cayo del Oso* has reached the halfway mark, and the new 720-foot long structure between Naval Air Station and the University of Corpus Christi is expected to be completed about the middle of March.

San Antonio Light, announcing—Major highway projects in Bexar County totaling $41.3 million are tentatively planned for contracting in 1970—subject, of course, to action on that old bugaboo, the North Freeway.

The controversial North Freeway comprises $19.1 million of the $41.3 million in projects which R. O. Lytton, district engineer, hopes will be put out for bid in 1970.

Austin American, editorializing—Despite the opening of more sections of the Interstate road system and construction of other new highways, road and street mileage . . . decreased in 1968.

According to data from the Bureau of Public Roads, the total last year was 3.68 million miles; in 1967 it was 3.705 million miles.

More figures . . . indicate that America is not about to be paved from sea to shining sea.

Harlingen Valley Morning Star, announcing—The new Padre Island high rise four-lane causeway came a step closer to reality Tuesday when the Texas Highway Commission authorized the expenditure of $300,000 for the state's share of right of way costs.

Raymond Stotzer of Pharr, state district highway engineer, said . . . a public hearing of right of way acquisition is planned for March and he expects actual right of way acquisition to begin in the latter part of 1970.

The new causeway will eliminate current traffic tie-ups caused by the swing bridge across the international waterway channel at Port Isabel. The causeway's center span will be of sufficient height to permit shrimp boats and other craft to pass underneath without having to utilize a drawbridge or other means.

Stotzer said that after the necessary right of way has been obtained the state will then enter into the financing of the construction of the causeway.

Del Rio News, disclosing—"Law West of the Pecos," the Texas Highway Department's first travel film on a particular region and a specific person from Texas' past, will have its world premiere in Del Rio.

The premiere showing will be at 2 p.m. on January 29 . . . The distinguished guests will then go by auto caravan to inspect the spectacular new Visitor Center in Langtry.

Fort Worth Press, reporting—A three-month delay in the opening of the Dallas-Fort Worth Regional airport may result from changes in the airport highway system being sought by airlines that will use the giant facility.

Airport spokesmen . . . revealed that the airlines, which had an elevated roadway system taken out of airport plans at a cost of $100,000 six months ago, now want another type of raised highway put in the plans at an added cost of $400,000 for just architectural and engineering planning.

Amarillo News, saying—The big chill means a big bill.

Exact figures on all extra costs incurred by local governmental units and individuals as a result of almost two weeks of sub-freezing temperatures are not available, but a survey Thursday indicated the expense will run to several hundred thousand dollars.

The storm toll can be counted in city and state expenses for overtime crews and equipment used on icy streets and highways, a rocketing bill for fuel in private homes and businesses, medical costs for those who slipped on glazed porches and sidewalks, and car repairs and cab fares following the rash of "fender benders" during the two weeks.

The Texas Highway Department estimated $10,000 had been spent in the Amarillo area for renting additional equipment and paying overtime for work crews.

Houston Chronicle, in a letter to the editor stating—The Chronicle editorial Dec. 31: "License tags by mail" commended the Texas Highway Department for its new program. This new program permits obtaining license tags by mail by paying the registration fee plus $1 for postage and handling.

The writer may be interested to know that Carl Smith . . . has offered this service for many years to those who wish to take advantage of it. . . . Mr. Smith charged only 40 cents for this same service. This year he is required by state law to collect $1 for this service, so I am informed.

It appears, therefore, that the state is deliberately trying to squeeze more revenue from the tax-weary public, or that it plans to be grossly inefficient in its handling of this new program.

Orange Leader, with a Daingerfield dateline—State Highway 276, designated by State Highway Engineer J. C. Dingwall as a "highway to the lakes," has been formally dedicated.

The highway is expected to attract people from metropolitan areas to such facilities as Lake O' the Pines, Daingerfield State Park, and Lone Star Lake.

"This was one of the great games of all time," says President Richard Nixon, as he presents UT Coach Darrell Royal a plaque after the Arkansas game proclaiming Texas national champions. Royal told the President that it was a big moment in all of their lives.

We're No. 1

First, it was Texas against Arkansas. Then it was Texas against Notre Dame, Indiana, and Penn State.

The first two may have been football games to some folks, but to thousands of others it was *our* state against *their* state, the good guys against the bad guys, or "We're No. 1" against "We're No. 8." (Or No. 1, if you were from Pennsylvania.)

To others it was one long crusade. The prize was unheralded in college football—to be national champions in college football's 100th year, and to have the President of the United States proclaim it thus.

On December 6 the Longhorns fought Arkansas in what was billed as a national title game. After playing three lack-luster quarters, the Horns came alive to win it, 15-14, in what President Richard Nixon called "one of the great games of all time." The President came to the Texas dressing room afterward to present the Horns with a bronze plaque proclaiming them national champions. He was going to give a plaque to Penn State as the team with the longest winning streak, but their coach, Joe Paterno, the governor, and the school president said they didn't want *anything* if they couldn't have the No. 1 plaque. They were No. 2.

On New Year's Day the Longhorns put together two last-quarter, ground-gobbling, sustained drives to down Notre Dame, 21-17. This time President Lyndon Johnson was in the dressing room to congratulate Darrell Royal and the Longhorns. President Nixon telephoned his congratulations, and Royal said he was glad they were able to make the President's choice stand up.

Two days later the Associated Press, voting after all the bowl games had been played, named Texas national champions for 1969, something all Horn fans had known for a month. Over at Penn State, Joe Paterno said, "We have as much right to be No. 1 as anybody else." (Sorry, Joe, but your team voted to play in Miami instead of the Cotton Bowl. You'll just have to remain 1969's No. 2 team throughout history.)

Orange lights bathed the tower of the main building on The University of Texas campus and lights in the windows formed a huge number one. Near sundown on January 4, Travel and Information Division photographer Jack Lewis set up his camera directly in front of the tower to make the center-spread picture on the following pages.

Texas Highways believes that all Texans can take pride in having the national championship team in the centennial year of college football. After all, *we* know which state has the best football players. ■

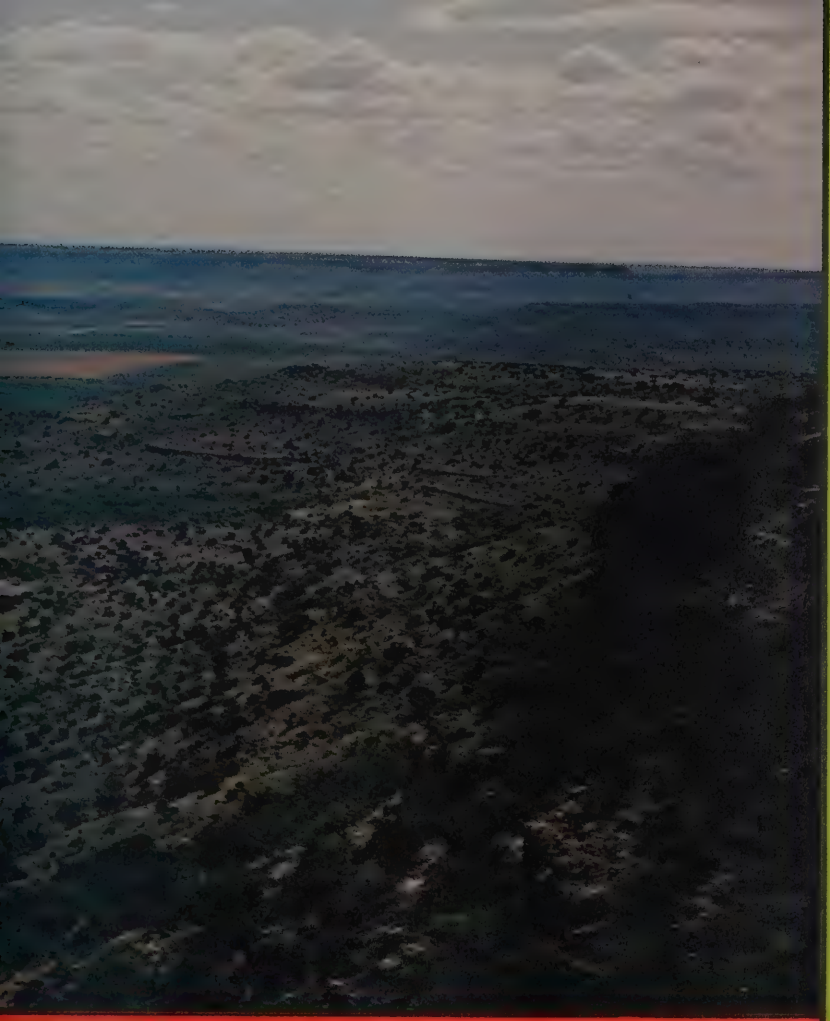
Photographs by Hugh Pillsbury and Jack Lewis

Plan a short side trip to the Caverns of Sonora, about nine miles west of town on FM 1989. The delicate crystal beauty of the caverns is equal to any. There is a free zoo and campground at the caverns, with grills, wood, water, and rest rooms.

PECOS TRAIL

Rangeland along the Pecos Trail was once the home of men who brightened their rough life by making up verses about an immortal, imaginary cowboy named Pecos Bill as they sat around campfires. The Trans Pecos Country was a wilderness, a haven for desperadoes, a region unto itself.

Today the rangeland is traversed by modern highways which take the 690-mile Pecos Trail to the edge of the Hill Country, dropping down onto the Rio Grande Plain, then returning to the land where



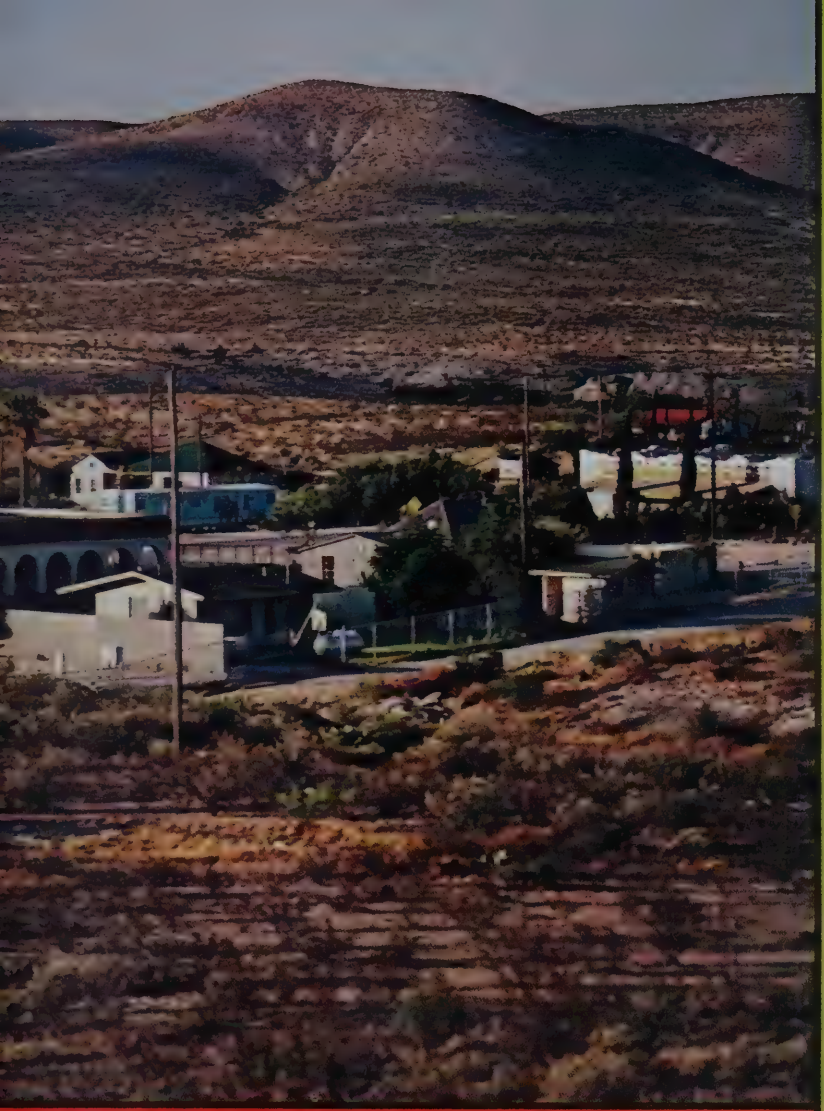
On the campus of Odessa College is an authentic replica of the Shakespearean Globe Theater in Stratford-on-Avon, England. Called the Globe of the Great Southwest, this landmark is the setting for traditional Shakespearean plays and national road show productions.

Travelers in the 1800's laboriously lowered wagons by rope and muscle to get into the Pecos River Valley, seen here from an overlook on US 290 west of Ozona. The rimrock still bears scars of those descents east of old Fort Lancaster, which was built to protect stages and freight wagons traveling between El Paso and points east. Only a chimney and foundations rest silently at the site. Restoration plans are underway.

Drilling rigs, pump jacks, and trucks hauling gigantic pieces of equipment are frequent sights as the Trail traverses the eastern edge of the Permian Basin, a flat semidesert expanse underlaid with rich oil pools. An experienced oil man can tell roughly how deep the well is by looking at the size and structure of the pump jack. The progressive city of Odessa is the major supply center of the Basin, while Midland is headquarters for more than 650 petroleum and related business concerns.

Much of Del Rio's early history is related to the gushing San Felipe Springs, which edges this scenic golf course. In 1857 the spot was a watering hole for an experimental U. S. Army camel corps. Visit the Val Verde Winery—the only one in Texas—and the Whitehead Museum, dedicated to Southwest life and legends of the 1800's. Judge Roy Bean is buried on the museum grounds. Del Rio has prospered as an international gateway and trade center. Ciudad Acuna, with its tempting markets and intriguing sights, is just across the border in Mexico. Bullfights draw big crowds.

Wool and mohair are of prime importance to the economy of all portions of the Pecos Trail country, but Sonora is the marketing center for the ranches. The Sonora Wool and Mohair Company has storage for seven million pounds. The annual Wool and Mohair Show is usually held in mid-June.



One of the most popular spots on the Pecos Trail is Langtry, where Judge Roy Bean once reigned as "Law West of the Pecos." Here on Loop 25 the Texas Highway Department has preserved the Judge's famed Jersey Lilly saloon-courtroom. A modern visitor center (the arcade with flags) interprets his colorful career and adjacent cactus gardens display southwestern flora. Behind the town is the Rio Grande.

PECOS TRAIL

Judge Roy Bean once reigned as "Law West of the Pecos."

The Pecos Trail crosses such towns as Six-Mile Draw and Four-Mile Draw — and the Pecos River, four times. Now tamed by impoundment, the Pecos was once a fearsome challenge to travelers, who faced a river 65 feet to 100 feet wide with a swirling current as deep as 10 feet over treacherous footing. Sheer cliffs often edged the river canyon.

Modern travelers cross and recross the onetime river barrier as bygone travelers did, surveying portions of the Edwards Plateau and the Rio Grande Plain. Today, as yesterday, the terrain leaves a vibrant imprint on the memory.

Multicolored cactus blossoms brighten the Pecos Trail countryside. Prickly pear cactus, with showy blooms and weird shapes, produce a fruit called "tuna." Indians prized it for food during late summer and fall.

The largest city on the Pecos Trail is Odessa, named by Russian railroad workers

Food is more palatable in the warm atmosphere of Farr's Buggy House, one of the major attractions in Monahans. Tourists can study relics of early pioneer days, such as household items and horse-drawn equipment. In the year 2012, visitors to Monahans will see the contents of a time capsule placed in the courthouse in 1962 during the Ward County Diamond Jubilee.

In the little towns along the Pecos Trail, today as yesterday, local stores are still the community centers. This is Telegraph, and an old cow puncher tells some young'uns how it used to be. Telegraph, named for stands of timber which were cut to build telegraph lines, is between Junction (known for its famed Easter Pageant) and Rock Springs (called "Land of Living Waters" because miles of flowing streams are fed by cool springs rising from rocky shelves and ledges). Scenic landscapes, accented by views of deer and wild turkey, unfold along the route.

The Pecos River High Bridge, a few miles west of the impressive Devil's River Bridge on US 90, is a sight-seeing treat from the canyon floor, or from any overlook on the bluff 273 feet above the river. Now, for the most part, a docile stream tamed by impoundment of its waters, the Pecos was once a fearsome challenge to travelers.

SHADES OF THE SAHARA—Spin over the sand at Monahans Sandhills State Park in a sand buggy, go sand surfing, picnicking, or hiking. The park, one of the state's most unusual, covers 3,840 acres of wind-sculpted sand. The modern stone and glass museum building just inside the entrance serves as an interpretive center with exhibits of Indian artifacts, wagon train relics, and botanical displays. The wooden picket fences on the south side of the highway are often seen in northern climes as snow fences; here they are sand fences.

PECOS TRAIL

reminded of their native plains. Modern Odessa is oil-oriented. Because of oil, Odessa was the only city in the nation to double its population every 10 years for four decades.

The influence of oil is seen all along the Trail. A marker at Iraan tells how the Yates Oil Field "blew in" in 1928, spraying oil on tents four miles away. That gusher exploded the myth that oil couldn't be found west of the Pecos and remains one of the largest producers in North America.

The Davy Crockett statue at Ozona, Dennis the Menace Park at Garfield, Alley Oop and Dinny the dinosaur in Iraan's Fantasyland, the mighty Amistad Dam, and sweeping panoramas of Mexico are just some of the delights awaiting the Pecos Trail traveler.

Don't miss Alamo Village, six miles north of Brackettville. The principal buildings were constructed from original Spanish plans for the John Wayne movie, "The Alamo." The authentic setting contains the historic mission, cantina, trading post, Wells Fargo Station, and other frontier buildings. Shoot-outs and stagecoach rides enliven a visit to the popular attraction, which is open every day. Not far from Brackettville is Fort Clark, whose historic buildings now serve as one of the best-known guest ranches in the nation. Deactivated in 1946 after nearly a century of distinguished service, the post protected frontier settlements and bolstered the Rio Grande defense line.

A Real Lifesaver

Richard F. Barthels makes an evaluation of construction work on a recent project in Gonzales County. The 23-year-old engineering aide from District 13 was recently credited with saving the lives of two construction workers injured on the project.

Richard F. Barthels, an engineering aide in District 13, has discovered why the Highway Department offers Red Cross First Aid courses periodically to employees. They can save lives.

Barthels, a 23-year-old employee in the Gonzales County residency, was credited with saving the lives of two construction workers recently after they were struck by electricity.

The accident occurred in December when a small construction crew from Amis Construction Company of Oklahoma City was pouring riprap drains on IH 10 in the northern part of Gonzales County.

A skilled crane operator was placing a bucket of concrete over the drain area as three workmen guided the object into place.

Suddenly, 7,200 volts of electricity arced from a high voltage power line to the boom of the crane and through the bodies of the three workmen. One worker, wearing thick gloves and rubber soled shoes was unhurt. The other two men fell to the ground severely burned and lifeless. They were not breathing, but a slight pulse was detected in one of the men.

Barthels, who was standing near the men, made sure the boom had been cleared from the power line and then administered first aid to Allen H. Thompson, foreman of the crew. He placed Thompson in position for mouth to mouth resuscitation, only to discover that the

IH System Pays High

Travel on the Interstate Highway System continued to be much safer than on other roads and streets in the nation in 1968, a report compiled by the Department of Transportation's Federal Highway Administration shows.

During 1968, 2.99 persons were killed for each 100 million vehicle miles of travel on Interstate highways, compared with 5.62 on other roads. The Interstate fatality rate showed a slight increase over 1967's rate of 2.89. The death rate on all highways in 1968 was 5.29, a decrease from the 5.34 fatality rate in 1967. The 1968 figures are the latest available.

Secretary of Transportation John A. Volpe said the report proves the Interstate System is an investment that already is paying substantial dividends in lifesaving.

"Sections of the system now open to traffic are paying handsome returns in safer travel, and when the 42,400 mile system is completed, it will be responsible for saving many more lives annually," Secretary Volpe said.

"Although safety is its most important benefit, the system also is furnishing the United States with a transportation facility that will return user benefits of $11.5 billion annually in lower operating time, accident, and strain-of-driving costs when the entire network is open."

The report showed the Interstate fatality rate in 1968 in rural areas was 3.68 per 100 million vehicle

man's jaws were rigidly closed. He then began external heart massage and artificial resuscitation through the man's nose.

While working on Thompson, Barthels noticed no one had begun work on the other unconscious workman. Continuing to work with Thompson, he began directing one of the construction workers on lifesaving steps for the other injured man. After a short period, both men resumed breathing and regained consciousness.

Meanwhile, an ambulance arrived at the site and the men were taken to a nearby hospital.

Barthels gained his lifesaving knowledge at a first aid class in October where he saw a film stressing rescue breathing and external heart massage for victims of electrical shock. Ironically enough, the film was borrowed from the Guadalupe Valley Electric Cooperative in Gonzales, owners of the transmission line that delivered the shock to the workmen.

District 13 Engineer Carl V. Ramert praised Barthels for his cool thinking and prompt action. In a letter to Barthels, Ramert said, "It is a rare occasion when one of us has the opportunity to save the life of a fellowman, and it is always encouraging and satisfying when that opportunity is not missed because of our human weakness. For that reason, we all wish to commend you for your actions on that day." ■

Dividends

miles, and on other roads was 7.56. In urban areas, the Interstate rate was 2.25, compared with the non-Interstate rate of 3.71.

The report, based on data submitted to the Bureau of Public Roads by state highway departments, disclosed the non-fatal injury rate on Interstate highways was about a third of the rate on other roads, or 90.61 per 100 million vehicle miles compared to 281.5.

Copies of the report, "Fatal and Injury Accident Rates on Federal-Aid and other Highway Systems," are available at 45 cents each from the Superintendent of Documents, Government Printing Office, Washington, D. C. 20402. ■

Training Course Aids Supervisors

District 7 has completed the final stage of a three phase program designed to train maintenance employees in performing their work more efficiently.

Some 23 crew chiefs from throughout the district gathered in San Angelo for the 15-hour course designed specifically for them. The course, entitled "Principles of Supervision," was planned to help the men in supervising the maintenance work assigned to their crews.

During the course, the supervisors were shown the importance of their position, how to broaden their concept of Department goals, how to acquire knowledge in basic principles of management, and ways of applying these principles to their problems.

This was accomplished through studying various topics such as the role of supervision in management, the application of supervisory principles to specific problems and responsibilities, cooperation and production, preventive discipline, and recognition and control of excessive waste.

The program, sponsored in conjunction with the Engineering Extension Service of Texas A&M University, is an annual project for the district.

Commenting on the crew-chief program, Bobby Evans, assistant maintenance engineer, said, "The program gives the crew chief a better understanding of his responsibilities. He is looking at the situation from the other side of the fence for the first time."

Noting a recent letter he received from one of the crew chiefs, Evans said the man "not only left the meeting with a better understanding of the men he works with, but also with more respect and consideration for the personnel above him."

The assistant maintenance engineer said he was very enthusiastic about the results of the first course.

The first two phases of the program included supervisory training of all maintenance foremen and their assistants. The second phase was an orientation course for all new hourly employees.

J. A. Snell, district engineer, said, "This type of training is needed and will benefit the employee as well as the Highway Department. It will certainly increase the morale and efficiency of our organization." ■

a nice place to visit, but...

(Ed. Note: The following article was written by Glenn English of the Houston Urban Office following a three-week summer trip to Europe as part of the Texas State Business and Engineering Leaders People-to-People Travel Program. During his journey through the Soviet Union and five European countries, English distributed Official State Highway Maps, Travel Guides to Texas, and Texas Fun-tier books to hosts in each city. He said the material was very popular, and persons receiving the material expressed a desire to visit Texas. In the following article, English reviews his trip to the Soviet Union.)

Our first stop on the three-week tour was at the airport in Helsinki, Finland. A modern facility much like American airports, it was crowded with American and European jets. Planes were parked directly in front of the terminal building, except for a large Russian four-engine turboprop aircraft parked across the ramp. This was the plane we boarded for Leningrad—our first stop in Russia.

As we winged toward Leningrad in the aircraft that apparently was built for easy conversion to cargo plane or troop carrier, we were served snacks by a Russian hostess. One of the passengers raised his camera while in flight and was immediately reminded that pictures were forbidden from the plane. We were in Russia.

After landing at the Leningrad airport, we were escorted to the immigration and customs building where we were met by an armed guard. After filling out declaration forms, we were told to stand by our luggage.

A customs official had us open our luggage and asked, "Do you have any books?" I showed him the Texas Highway Department literature. He thumbed through them, handed them back, and cleared us through customs. Evidently our publications are not considered subversive to the Russians.

Outside the customs building we were introduced to our tour guide, Gaulia. She was to remain with us the entire week in Russia. We then left for our hotel—with Gaulia's assurance it was the finest in Leningrad. Although the hotel was constructed in 1836, we did have two medium-sized rooms with a private bath on the third floor.

Getting to our room was the biggest problem we encountered. The elevator operator was allowed to carry only four people up and six people down. It took almost 10 minutes to get to our room. We soon learned it was faster to walk.

Our first tour in Leningrad was through a concrete prefabrication plant that makes concrete panels for Russian apartment construction.

In front of the plant was a large sign with pictures of Russian workers. Gaulia explained that they were workers who had done the best job for the plant during the past year. This was Russian incentive pay.

Panels were made on an assembly line using steel forms and welded mesh reinforcing. Then the panels were steam cured. Anchors were cast into the panels and were later welded together at the jobsite as the panels were erected. Exposed aggregate was used to decorate the panels.

After the plant, we visited several completed apartments and toured a partially completed apartment. Most of the apartments were small by American standards. There was one community kitchen and television room on each floor.

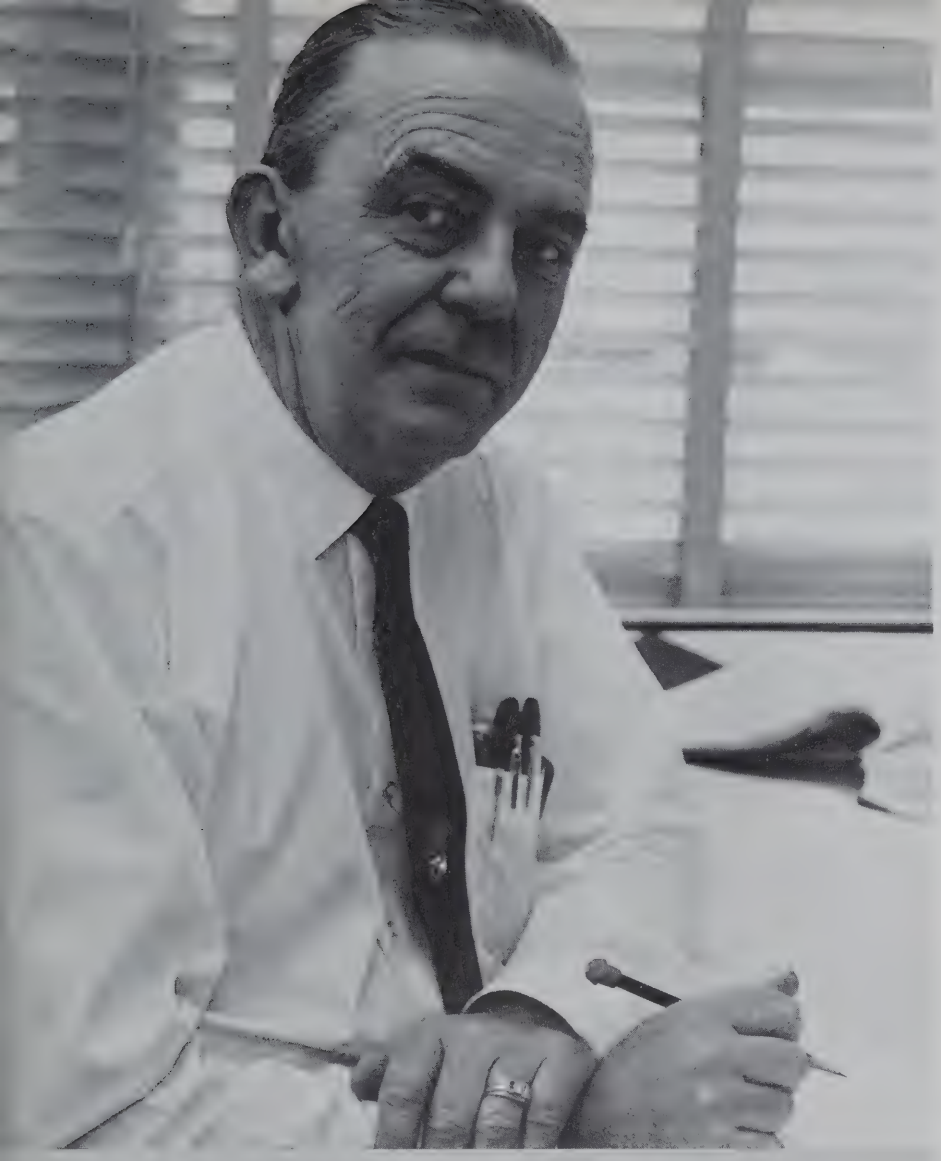
Each apartment room had a steam radiator and heat was generated by a central steam plant in each complex. Apartment exteriors were all similar and very monotonous in appearance. Only buildings with six floors or more have elevators.

Most of the apartments were rented from the government, but a few were said to be available for purchase, similar to our condominiums. A person moving into the city is said to be given a choice of only three apartments selected by the government, but he may have to wait a while to move in.

No private single family residences are allowed within Leningrad and Moscow. Small country acreages surround the cities, and apartment dwellers are allowed to build small cabins and grow food for their own use and to sell. This small free enterprise activity is said to be the only reason Russia does not have a food shortage.

On one of the tours we visited an older apartment in Leningrad occupied by two university students. The apartment consisted of a room 5½ feet wide, 14 feet long, and 12 feet high. The boys slept in a loft at one end of the room. The kitchen and bathroom were shared by seven other apartments. It was noted that a decade ago 70 percent of the city shared bath and kitchen facilities, while today it has been reduced to 30 percent.

It was never made clear how contracts for construction of new apartments were awarded, or who was responsible for completion of the contracts. They were evidently having



Glenn English, Houston Urban Office . . .
. . . distributed Highway Department literature in Russia . . .

Massive apartment complexes house a large majority of the Russian people. These new nine-story apartment buildings have just been completed in Leningrad.

trouble with workmanship and completion because many buildings needed finish workmen and materials.

Almost all workmen on the jobs were women, including plumbers, carpenters, and equipment operators. The cost of these new apartments was about $15 per square foot, and Russia's present program calls for construction of $70 billion worth of these units. *(In Texas for $15 per square foot one could build an apartment complex with tiled baths, carpet in the bedrooms and part of the living area, an all-electric or gas kitchen with a double oven, central heat and air conditioning, possibly a fireplace, but, above all, plenty of room. Resident engineers' offices for the Highway Department cost about $15 a square foot. This includes all-masonry construction, a lot of fluorescent fixtures, heating and air conditioning, low maintenance finishes, toilets, vinyl tile floors, and acoustical ceilings.)*

As we were leaving the apartment complex, an interesting conversation took place between Gaulia and my wife Dorothy:

"Gaulia, who lives in these apartments?"

"We all do. We are all the same."

"But this man is the manager of this plant. Does he live here?"

"Yes, we are all the same."

"Do members of the Communist Party, as well as non-members live here?"

"Yes, we are all the same."

"How about the high officials of the government, or high-ranking members of the Communist Party, do they live here also?"

Gaulia and the plant manager talked a few minutes in Russian, and then Gaulia answered, "Well, it is to be expected that they do not live in these apartments."

We later learned that the high officials had private houses in the suburbs, but nobody could be taken

a nice place to visit, but...

out to see the areas where they lived.

After visiting several historic spots in Leningrad, our tour of the city came to an end, and we boarded the "Red Arrow" train for a trip to Moscow. The train was very modern with private compartments, and in eight hours we had made the long journey. Rural areas of Russia look very similar to our northern states except there are fewer roads, fewer paved roads, and fewer cars.

Upon arrival in Moscow, we were taken to the Metropole Hotel, a rather ancient hotel near Red Square, the Bolshoi Theater, the Kremlin, and a department store owned by the government.

As we approached the hotel, we saw a line of people five blocks long standing two to three abreast. Gaulia explained they were mostly Russian citizens waiting in line to visit Lenin's tomb in Red Square. They come every day the tomb is open and stand in line for a glimpse. If they don't make it to the tomb the first day, they come back the next day and try again.

We visited two experimental apartments that were different from the units we saw in Leningrad. The government constructs prototype units in Moscow to see how they work and look. If acceptable, a mass production schedule is started to meet housing needs. These experimental units were both 14 stories as compared to the nine-story units in Leningrad. They were also more modern and luxurious than those in Leningrad. They were not much larger, but the finish and planning were much better. Also, the exteriors were not so monotonous. Apparently Moscow gets a little more of everything.

We also visited Moscow University and looked at the classroom and dormitory facilities. The university building is very impressive and ornate. Classrooms are adequate and the dormitories appear slightly smaller than our university facilities. Enrollment is about 40,000.

The subway system is one of the most unusual sights in the capital city. The stations are beautifully decorated, ornate, and exceptionally clean. Moscow subways now carry 1.3 billion passengers per year—about the same as the New York subways. Buses and trolleys also aid the transportation problem by transporting 2.7 billion passengers a year.

Since Moscow has no freeway system, only a few arterial streets, and very few automobiles, the people must rely on the subways, buses, and trolleys for transportation.

Moscow's plan for the future includes dividing the city into eight districts, each of which will be self-sustaining with only 20 percent of the inhabitants commuting out of their area to work. They also plan to move many government offices from the Kremlin area to a belt highway encircling the city. This would make it easy to travel by bus or car between government offices and relieve pressure on the subway and trolley system.

Russian highways we saw were predominantly asphalt pavement. Some of the arterials were nine lanes, four lanes in each direction with one center lane for high officials. It was not explained what happened when high officials meet in one of these lanes.

Arterial streets were more than adequate for traffic conditions at the time of our tour. There were a few crowded intersections near Red Square. There are only about 500,000 cars in Moscow, a city of 6.5 million, and less than 100,000 of these are privately owned. We were told that traffic has increased threefold on some streets in the past three years as more people have been able to buy cars.

A Russian citizen who has the money and wants to buy a car may have to wait as long as five years to obtain one. Since their small cars cost about $3,000, not many ordinary citizens can afford a car. Present automobile production is about 350,000 cars per year and plans are to double production in the next year when a Fiat plant begins production on the Volga.

In some of the downtown intersections, experiments are being conducted on computer traffic control. There is no posted speed limit in Moscow and the people drive accordingly. A law requires drivers to keep their cars clean, and it is understood that four violations will suspend a driver's license for three months.

By Texas standards, European highways in general and Russian in particular had restricted geometrics and were of substandard construction. The signing was sporadic, lighting was inadequate, and traffic was interrupted by oxen carts, donkey carts, and wagons. As traffic increases, better designs will be a necessity. No doubt Russia will need freeways and more arterial streets.

We observed two road construction crews laying plant-mix asphalt paving with a lay-down machine that appeared to be similar to the Barber-Greene machine we use. A hefty Russian woman operated the machine and three women were operating the rollers behind the machine. A fleet of small dump trucks were hauling to the machine. These trucks appeared to hold about two yards. (Minimum load capacity on construction in Texas is

Robert L. Newell, associate dean of engineering at Texas Tech in Lubbock, inspects a sleeping loft (bed) in an old Leningrad apartment of two university students. The one room apartment is 5½ feet wide, 14 feet long, and 12 feet high.

If this small kitchen looks crowded now, wait until it's being used. The kitchen was designed to serve one floor of an apartment house or eight apartments. Two unidentified tourists, left, a Russian student, Betty English, and another Russian student briefly discuss the unique kitchen.

about eight yards.) We never saw more than two at the machine at one time.

After talking with several Russian engineers, I discovered they enjoy a slightly better standard of living than most of the citizens. They appear to be competent engineers, although they are not yet faced with the masses of cars we have in Texas. One engineer who was in charge of design for all apartment projects in Moscow said his salary was 250 rubles per month ($275). He did not own an automobile and said he didn't want one because of the odor of the exhaust. He lived with his family in one of the apartments he designed and used the subway to travel to and from work.

About one third of Moscow's homes have telephones. By 1980, the plan is to have a phone in every home. Moscow has printed no general telephone directory since 1961, and there are no plans to print one.

One Russian explained, "We don't need directories. When we want a number, we just ask the operator for it."

After an exciting week touring Russia's two largest cities, we left for Yugoslavia. We soon found out that the Yugoslavs do not like the Russians, even though they have a communistic type of government. On the plane from Moscow to Belgrade, the steward told some Russian passengers that only English and Yugoslavian were spoken on the plane.

Compared to the Russians, the people in the bustling city of Belgrade seemed happy and energetic, although they have seen much war. It is said that Belgrade has been occupied by at least 70 different nations.

Yugoslavia was a pleasant contrast to the Soviet Union, but we enjoyed the *entire* trip, and we came away with a deeper understanding of the people of Europe and Russia. ■

To and From Our Readers

Lost and Found

R. E. Stotzer Jr., District 21 engineer, says Mrs. Felix Lima of McAllen has expressed her thanks for the Highway Department's honest crews.

Ten days after losing her billfold, the Department office in Pharr notified her that it had been found by Baldemar Lopez, a 12-year employee of the Mission maintenance section, near the intersection of 18th Street and US 83. Still in the billfold when it was returned to her were several credit cards, a small amount of money, and an Olympic gold piece from Mexico.

Unselfish Effort

Texas Public Employees Association president Donald J. Frye, a senior resident engineer in District 15, has been awarded the KBAT Texas Star Award by radio station KBAT of San Antonio. The inscription on the award reads, "Awarded by radio station KBAT for unselfish effort in the field of humanities and public service for your willing and capable leadership in making your community a better place in which to live. For the utilization of your time and talent."

Interest Rate Rises

Highway Department employees are reminded that the interest rate on US Savings Bonds has been increased from 4.25 percent to 5 percent.

The new rate applies to all outstanding Series E and H Bonds sold on or after June 1, 1969, if held to maturity. The higher rate also applies to older bonds.

Beginning with the first semiannual interest period starting on or after June 1, 1969, rates on outstanding E and H Bonds will be increased to yield 5 percent, when held to maturity or extended maturity. The original maturity on the Series E Bond has been shortened from seven years to five years, 10 months. H Bonds will continue to mature in 10 years.

Freedom Shares sold in combination with E Bonds since May 1, 1967, will be removed from sale effective June 30, 1970. Allotment authorizations may be shifted over to Series E Bonds prior to June 30, 1970.

Departmental Dialogue

Overheard at a recent conference:

"This system will provide interaction with the engineer."

"Sounds pretty sexy to me," came the adlib from the back of the room.

Dialogue during a slide show:

"Here we have a slide showing a

"IF FEZBY GRADUATES FROM JUST ONE MORE OF THEM DISTRICT SCHOOL COURSES... WE'LL HAVE TO GET HIM A BIGGER LOCKER AND A PRIVATE DRESSING ROOM!"

TEXAS HIGHWAY COMMISSION
DEWITT GREER Chairman
HERBERT C. PETRY JR. Member
GARRETT MORRIS Member
J. C. DINGWALL State Highway Engineer

Texas Highways

TEXAS HIGHWAYS, official journal of the Texas Highway Department, is published in the interest of highway development in Texas and for departmental education in construction, maintenance, and operation.

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seeder seeding . . . and here's a slide showing blah blah blah . . ."

Still later . . . Engineers were told that *femme sole* means a woman who is legally unattached, which led one man to inquire if the Department was looking for loose women.

Here's one that threw everybody:

"I don't want to optimize your thinking."

And final words of wisdom:

"A sorry design can't be cured with signing or delineation."

Fitting Tribute

The following poem is one Mrs. Harold C. Paulson read at the 1969 AASHO ladies luncheon in Philadelphia. It was written by Pearl Wallace Chappell for *Engineering Wives*. The original title was *The Engineer's Wife,* however, Mrs. Paulson paraphrased it and came up with *The Highwayman's Wife*. She recently mailed the poem to Mrs. J. C. Dingwall, noting that she had received many requests for it as a memento of the occasion.

She is the bridge to help him cross
The rivers of distress.
She is the rule he measures by
When time and distance press.
She is the blueprint for his days
To plan and balance right.
She is the healer of his heart
When he's wounded in the fight.
She is the smoothness she designs
For the highway of his years:
She's the courage that he needs
To hide his doubts and fears.
She is the column, arch, and beam
To hold his world in place;
She treasures his rare gift
Of blending strength with grace.

Complicating Computations

"You've got to be kidding!" a stunned Houston motorist wrote when he discovered he had been charged $426 for his 1970 license plates. "I manage a data processing department. Thanks for showing my boss that other people have D.P. problems, too!" he added.

"You can bet your boots we were kidding," wrote back Bob Townsley, Director of Motor Vehicle Division. "The mistake occurred as a result of an input error showing the gross weight of his 1967 pickup as 43,000 pounds instead of 4,300 pounds. The computer is programmed to compute the fee from the gross weight and it did its job."

Travel News

Travel notes from the *Travel Log,* monthly newsletter of Travel and Information Division: The Copano Bay bridge which the Highway Department turned over to the Parks and Wildlife Department for conversion into a fishing pier has become one of Texas' more popular state parks—the Copano Bay State Recreation Park. It offers 8,400 feet of pier to fish from, stroll along or photograph from, concession stands with everything the fisherman needs, and there is special lighting to provide round-the-clock fishing. It's well worth a side trip to any fisherman heading south through Texas.

Follow the Dogwood Trail will be the theme of the first full-color promotional brochure to be produced by the Palestine Chamber of Commerce. It will feature leading attractions in the Palestine area. Distribution will be through travel agents, Highway Department tourist bureaus, and to visitors to Palestine's Dogwood Trails Festival in the spring.

Who's Guilty?

Speaking of mistakes, the computer isn't the only one who makes them. In the December issue of *Texas Highways,* we gave the amount paid for the Baptist Church, where the new highway building will be constructed, as $383,676 when it should have been $368,678.

Bean Praise

Commenting on the Travel and Information Division's new folder, *Judge Roy Bean,* Walter B. Moore, editor of *Texas Almanac* says, "This is as colorfully attractive as the story of that fabulous Texas character. I am confident that the folder will be widely used and will stimulate tourism. It ranks with the folder on Texas wildflowers in beauty and serviceability."

"Texas is fortunate to have a highway department so efficient in many ways, one of the best being the Travel and Information Division services," he concluded.

The folder was designed by Ernest Jordan of Travel and Information Division.

Greer Reappointed

Dewitt C. Greer, Texas Highway Commission chairman, has been reappointed by President Nixon to a three-year term on the National Safety Advisory Committee.

The committee, established in 1966, advises the Department of Transportation secretary on federal motor vehicle safety standards and other highway safety markers.

Former employee S. H. Gulledge, now working in Venezuela, sends this photo of the national flower of the country—the araguaney tree. This plant is about 30 feet high with bright yellow blossoms which bloom before the leaves come out. Flowers are plentiful in Venezuela, says Gulledge, who buys two dozen roses each week for only $1.25. The flowers are for his wife, of course.

OVER THE HIGHWAYS

• We were privileged to visit your state recently and thoroughly enjoyed your roadside parks. Texas has more of these conveniences than any other state we have traveled through. And, they are so beautiful and well kept.

We have toured Texas during the spring, summer, and fall and have always found it delightful.

Thank you so much for your interest in and care of your "friends of the road." It makes traveling a real pleasure.

Mr. and Mrs. James O. Cox
Elsinore, California

• We traveled through 22 states recently on a two-month trip. This was our first visit to Texas. We really enjoyed traveling through this big state.

We stopped at a tourist bureau to get information and received the book of the cities and towns, places of interest, and historical information. We really enjoyed this booklet and it was most helpful.

Thanks again for the courtesy from the State of Texas.

Mr. and Mrs. Melvin Moore
Ellendale, Delaware

• I was recently given one of your Flowers of Texas folders, and I want to tell you how very beautiful these color folders are. The pictures of the flowers look exactly like the original flowers.

I hope every visitor to Texas gets one of these folders. It also would be nice if every Texas family could get one, also.

Please give us more of these beautiful folders.

Mrs. Ethel Fowler
Sabine Pass

• On a recent trip from Dallas to Lubbock we were unfortunately delayed for about two and one-half hours four miles east of Dickens by a stalled truck blocking traffic on an icy incline. It was quite reassurring to know the Highway Department and the Department of Public Safety were there keeping track of stalled and stuck cars.

After we were able to continue, we soon stopped to clear the ice off the windshield. No sooner had we stopped than a Highway Department truck pulled along side and a man wanted to know if we needed any help. It was a relief to know someone knew we were out there and if anything should happen we would be aided within a relatively short time.

Thanks again for being there. The efforts of your hard-working department on such a bitterly cold night are very much appreciated.

Mrs. Jim D. Boydston
Lubbock

• About a month ago I dropped my billfold at a rose stand at the intersection of US 69 and IH 20. A few days ago I received the billfold, with my checkbook in it. It was disappointing not to find my credit cards, driver's license, and social security card inside.

Today I received from the Highway Department in Tyler (Mr. W. R. Coleman) an envelope containing my credit cards and a nice note saying some of the Highway Department employees had found them along the highway.

I feel sure the one who found my billfold took the money, about $24, and threw the billfold away, scattering the cards beside the road because they were weatherworn. I am so thankful to have my cards that the money means nothing except I am sorry to have tempted anyone in this way. This is my first and I hope last experience of losing my billfold.

My heart is full of gratitude to the Highway Department and its fine employees throughout the state.

Mrs. Ray W. Willoughby
San Angelo

• Some weeks ago my husband and I had the pleasure of again crossing your big, wide, wonderful state on the way to our new home in Georgia.

About 40 miles east of Dallas we stopped at a rest station to eat. We noticed a busy attendant going about his duties, and before long he was near our camper with a friendly greeting.

After finishing our meal, we were soon packed and on our way. About 25 miles away my heart almost stopped. I discovered my purse was missing and that I had left it at the rest area. We immediately turned around and headed back to the rest area, hoping that the man I had seen might have found it.

Arriving at the area, I asked the man "Sir, did you find a purse?" Calmly he said, "What kind of purse?" I described it and he said, "Yes, I have it." He had carefully placed it in a box. As he took it out, I noticed in his hat was the name Coy F. Allen.

I had already watched this kind man at work and had seen how dedicated he was to his job and his state. I wanted to reward him, but he smiled and said, "No, I'm only doing my duty."

I hope as we establish our home in Georgia that we might be as helpful to others as this kind man was to us that afternoon. With a grateful heart I greet all that make these rest areas such a joy to the weary traveler.

Mrs. Samuel G. Polson
Augusta, Georgia

AWARDS

(As of January 31, 1970)

40 Years

Equipment and Procurement Division
John B. Nations, Director

35 Years

Bridge Division
C. Falls, Draftsman III

District 1
Frazier H. Brown, Maintenance Technician II

District 3
Luther M. Belew, Maintenance Technician II

District 12
Emory E. Atchley, Accountant III
Wayland E. Kay, Senior Marine Superintendent

District 13
Joseph M. Urban, Maintenance Technician I

District 15
Ernest C. Morgenstern, Shop Foreman IV

District 17
Jack M. Rogers, Maintenance Technician II

District 18
Grover Green, District Maintenance Engineer
Oliver G. Rayner, District Construction Engineer

30 Years

Insurance Division
William P. Foyil, Maintenance Construction Supervisor II

District 4
Walter A. Mooney, Maintenance Technician II

District 13
Robin J. Rauch, Maintenance Technician II

District 16
Marshall H. Stobbs, Maintenance Construction Superintendent

District 18
Thurman B. Derryberry, Engineering Technician IV

District 19
James D. McCurry, Maintenance Technician II

25 Years

Materials and Tests Division
Larkin M. Smallwood, Engineering Technician V

District 7
William L. Taylor, Maintenance Technician II

District 8
George L. Boring, Maintenance Technician II
A. J. Williams, Maintenance Technician II

District 11
A. C. Strange, Maintenance Technician I

District 15
Manley E. Conley, Engineering Aide IV
Alifonso M. Flores, Maintenance Technician I

District 16
Jack C. Hardwick, Engineering Technician V

District 20
Thomas M. McNamara, Supervising Resident Engineer

RETIREMENTS

Construction Division
Jeff W. Seay, Supervising Field Engineer

Materials and Tests Division
John C. Middleton, Maintenance Foreman III

District 1
John A. Cupp, Maintenance Technician I
William E. Kuykendall, Draftsman III

District 2
Arthur B. Blackwell, Maintenance Technician II

District 3
Oscar A. Lindsey, Maintenance Technician I
Leon S. Partridge, Supervising Resident Engineer

District 5
Ralph G. Lemons, Maintenance Technician II
Clarence Proctor, Maintenance Technician II

District 7
John E. Cozart, Maintenance Technician I

District 9
John J. Pollock, Maintenance Construction Foreman II

District 12
Elbert D. Pierce, Maintenance Technician I

District 14
William A. Emmrich, Maintenance Technician II
Ambrocio G. Villalpando, Maintenance Technician II

District 15
Ralph McLelland, Right of Way Agent IV

District 16
Ernest Kallus, Maintenance Technician II
Joseph L. Portman, Engineering Technician V

District 18
Edward A. Morrow, Maintenance Technician II
Herschel C. Richardson, Right of Way Agent II
Spence B. Taylor, Maintenance Technician II

District 19
Walter O. Lee, Maintenance Technician II
Richard C. Porter, Maintenance Technician II

District 20
Morris G. Gibbs, Maintenance Technician II
Hugh M. Hornsby Jr., Senior Resident Engineer

District 23
Bernay A. Harris, Engineering Technician III
Wiley H. Stewart, Maintenance Technician I

Back Cover

The northern portion of Texas received a bitter taste of winter the latter part of December when a cold front sent temperatures plummeting and left the area covered with frigid white flakes. The Department tourist bureau in Wichita Falls received more than its share of the icy blanket of winter. A yellow light inside the bureau adds a touch of warmth to the cold scene and says "Welcome to Texas—Land of Contrast." —Photograph by Willis Albarado

TOURIST